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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,844	07/25/2003	Jinhun Joung	2003P07969 US	2648

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Elsa Keller
Siemens Corporation
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170 Wood Avenue South
Iselin, NJ 08830

EXAMINER

MALEVIC, DJURA

ART UNIT	PAPER NUMBER
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2884

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01/28/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/627,844	Applicant(s) JOUNG ET AL.	
	Examiner DJURA MALEVIC	Art Unit 2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/08/2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 10/23/2008 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Specifically, applicant argues that Hase fails to teach individual scintillating crystals. The examiner agrees. However, Hase shows that a collimator having plates with a number of through holes formed side by side, each hole for guiding and inserting a plurality of plates is known (Figures 1, 2, 6, 11 and 14). Hase further teaches that the method of making such a collimator improves sensitivity, resolution and manufacturing yields. The examiner does not rely on the placement of the scintillating crystals as taught by Soluri as motivating for the combination as implied by applicant. The examiner points to Hase to solve the cumbersome process of fabricated the collimator of Soluri as acknowledged by applicant. In considering the teachings of the combined references or the known knowledge, the examiner has found that each of the claimed elements is known with the scope and content of the prior art. Therefore, one of ordinary skill in the art would have recognized at the time the invention was made that the capabilities or the function of the combination were predictable. Notice, Hase also teaches parallel-beam focusing collimation.

Applicant further argues that the rationale that the collimator as taught by Hase provides high resolution and improves manufacturing yield are broad and a general statement of providing "new and improved" does not constitute specific reasoning to combine the prior art references. Applicant further argues that the examiner reconstructed applicants' claims only upon hindsight. The examiner respectfully disagrees. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). To start, a broad and general reason is a reason nonetheless. In this instance, applicant has already acknowledged that Soluri fabrication of the collimator is cumbersome, thus a need for a different technique for fabricating a collimator would be appreciated and known to one of ordinary skill in the art. Thus, the examiner looks to Hase to show a known and different method for fabricating a collimator for improvement yielding a predictable result.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2884

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 7, 10 – 16, 19 -25 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over in Soluri et al. (US 2002/0175289) in view of Hase et al. (US Patent 5,099,134) and Nishiki (US Patent 4,725,734).

With regards to claims 1, 10, 19 and 28, Soluri discloses a scintigraphic device (Figures 1 -8), comprising: a collimator device 1 including a grid of collimation square holes (figure 2) formed by a plurality of sheets arranged in a grid pattern [0037]; and pixilated scintillators 20 individually located in each of said collimation square holes; and a detector 3 coupled to said pixilated scintillators and operable to detect radiation emanating from an object and interacting with said scintillators after passing through said collimator device [0031 -0032].

Soluri fails to expressly disclose the method and/or the specifics of producing the collimator, for example, each of said sheets having evenly spaced slots into which other sheets are inserted. Hase shows that a collimator having plates with a number of through holes formed side by side, each hole for guiding and inserting a plurality of plates is known (Figures 1, 2, 6, 11 and 14). Hase further teaches that the method of making such a collimator improves sensitivity, resolution and manufacturing yields (Col. 1, Lines 45 -52). In view of the utility in containing a collimator with such characteristics, it would have been obvious to one of ordinary skill in the art at the time the invention

Art Unit: 2884

was made to specify that the collimator disclosed in Soluri be made such as that taught by Hase.

Additionally, Soluri discloses coating the scintillation crystals with an optical reflecting material [0038], but fails to teach said optical reflective material coating at least a portion of the surfaces of said sheets forming said grid of said collimation square holes. Notice, collimators comprising a coating of an optical reflective material is well known and conventionally used in the art. For instance, one of ordinary skill in the art may look to Nishiki, who shows it is known to have a collimator comprising plates where said plates are coated on both sides with a highly efficient reflector to reflect light beams generated from the scintillating element (Col. 3, Lines 55 – 58). Therefore, one of ordinary skill in the art would have recognized at the time the invention was made that the capabilities or the function of the combination would be predictable. Thus, the selection of an optical reflective material coating a scintillator crystal or coating a collimator represents an obvious choice within ordinary skill of the art, i.e., a choice between known viable alternatives (see KSR, 82 USPQ2d at 1395-66). Therefore, a collimator comprising a coating of an optical reflective material would have been recognized.

With regards to claims 2, 11 and 20, Soluri modified discloses a collimator comprising optically reflecting material (See rejection of claim 1), which maximizes light intensity of pixilated scintillators events.

With regards to claims 3, 12 and 21, Soluri discloses said scintillators are scintillation crystals [0034].

With regards to claims 4, 13 and 22, Soluri modified discloses pixilated scintillators comprising square-shaped configuration [0037] (figure 2).

With regards to claims 5, 14 and 23, Soluri modified discloses said plurality of sheets is formed of a material having a high density [0033].

With regards to claims 6, 15 and 24, Soluri modified discloses said high-density material is tungsten [0033].

With regards to claims 7, 16 and 25, Soluri modified discloses said high-density material is lead [0033].

Claims 8, 9, 17, 18, 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over in Soluri, Hase and Nishiki in view of Melscher et al. (US Patent 5,961,714).

With regards to claims 8, 9, 17, 18, 26 and 27, Soluri modified discloses the use of an optical reflecting material (i.e., the disclosure of Nishiki), however Soluri modified does not disclose using exclusively TiO_2 or MgO as the reflecting material. It would have been obvious to include TiO_2 and MgO as the reflecting material, since it is conventionally used in that environment and would make the reflectance more efficient in view of what is old and well known in the art. For instance, Melscher et al. shows it is known to use TiO_2 and MgO as a reflecting material. Thus, the selection of the reflective material represents an obvious choice within ordinary skill of the art, i.e., a choice between known viable alternatives (see KSR, 82 USPQ2d at 1396). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made

Art Unit: 2884

to specify that the collimator disclosed in Soluri be made comprising the reflecting materials of TiO_2 or MgO , such as that taught by Melscher.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Newly added prior arts:

Schlosser, US Patent 4,047,037, shows a practical assembly of the collimator array 33 is achieved through the use of a plurality of discrete rectangular shaped sheet members, as are revealed in the partial assembly of collimator 33 shown in FIG. 6. Referring to that figure, note that member 100 is formed as a flat rectangular sheet of height, h , corresponding with desired collimator thickness. Formed inwardly from one edge of member 100 are a plurality of slots spaced in regularly recurring parallel fashion and identified generally at 102. Slots 102 are formed having a height equivalent to $h/2$ and are mutually spaced to define a pitch or center-to-center spacing. When the plurality of sheet members, for instance, as shown at 100 and 104 are vertically reversed in mutual orientation and the corresponding slots, respectively, as at 102 and 106 are mutually internested as shown, the collimator may be built-up to desired dimensions without recourse to elaborate forming procedures. Note that the width of slots 102 and 106 closely approximates the width of each of the sheet members within the array with a controlled allowance for tolerances. Practical fabrication techniques are available for forming the slots as exemplified at 102 and 106.

Malamud, WO2004/023123 designated US Pub. 20060039527, shows that constructing an AS foil (i.e., coating) configuration having foils along two directions is generally more difficult than constructing an AS foil configuration in which the foils are along a same single direction, a "two-dimensional" foil configuration can be constructed using methods known in the art. For example, a two-dimensional foil configuration comprising foils along two directions can be constructed by appropriately slotting the foils so that they can be inserted one into the slots of the other to form an array of "cubicles".

Previous presented prior arts:

Cusano, GB 2034148 A, show that a collimator comprising walls are preferably coated with light reflective material and further said light reflective surfaces being translucent to gamma photons may be provided in channels. The collimator further comprising scintillators which may be a single crystal. Thus, disclosing that a collimator comprising a single scintillator in a hole wherein the walls of said collimator and further comprising an optical reflective coating (i.e., magnesium oxide) is known.

Schmand et al. (US pub. 2004/0140431) discloses a grid array, adapted to receive a plurality of scintillators used in association with an imaging device. Also, Cusano (US Patent 4,187,427) teaches a structure for collimated scintillation detectors using optically reflective material like magnesium oxide. Barium sulfate...etc.

Andreaco (US Pub. 20040159792) [0068], Schmand et al. (US Pub. 20040140431 [0031] and Jiang et al. (US Patent 7,308,074) all teach the claimed reflective materials.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DJURA MALEVIC whose telephone number is 571.272.5975. The examiner can normally be reached on Monday - Friday between 8:30am and 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571.272.2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2884

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

***/Djura Malevic/
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Supervisory Patent Examiner, Art Unit 2884